CLAIMS

1. A fluid level detection system for use with a pressurized tank containing a fluid, comprising:

a tank module means for detecting the fluid level within the tank and displaying the fluid level information, the tank module means comprising:

a magnetic sensing means for determining an angular position of a magnetic field of a magnet from a magnetic float gauge assembly connected to the tank and transmitting the angular position;

a microcontroller means for receiving the angular position information transmitted by the magnetic sensing means and translating it to a fluid level value that corresponds to a percentage of fluid remaining in the tank, and transmitting the fluid level value;

a display means which receives the fluid level value transmitted by the microcontroller means and displays the fluid level value;

a housing means for enclosing the magnetic sensing means, microcontroller means, and display means; and

wherein the tank module means is mounted to a gauge of the magnetic float gauge assembly.

2. The fluid level detection system of claim 1, wherein the tank module means further comprises an attachment means for attaching the tank module means to the gauge without physically modifying the gauge.

3. The fluid level detection system of claim 2, wherein the attachment means is attached to the gauge without interfering with the operation of the gauge.

4. The fluid level detection system of claim 1, wherein the tank module means further comprises an electronic inclinometer means for determining the angular

orientation of the tank, and transmitting the angular orientation to the tank module microcontroller means, wherein the tank module microcontroller further receives the angular orientation from the inclinometer means, and calculates the fluid level value to a corrected fluid level value.

5. The fluid level detection system of claim 1, wherein the tank module microcontroller means calculates the fluid level value that corresponds to the percentage of fluid remaining in the tank, regardless of the orientation of the mounted tank module means with respect to the gauge.

6. A remote fluid level detection system for use with a pressurized tank containing a fluid, comprising:

a tank module means for detecting a fluid level within the tank and transmitting the fluid level information; and

a display module means for receiving the fluid level information transmitted by the tank module means, and displaying the fluid level information;

the tank module means comprising;

a magnetic sensing means for determining an angular position of a magnetic field of a magnet from a magnetic float gauge assembly connected to the tank and transmitting the angular position;

a microcontroller means for receiving the angular position information transmitted by the magnetic sensing means and translating it to a fluid level value that corresponds to a percentage of fluid remaining in the tank, and transmitting the fluid level value;

a radio transmitting means for receiving the fluid level value from the tank module microcontroller means, and broadcasting the fluid level value;

a battery means for powering the magnetic sensing means, tank module microcontroller means, and radio transmitting means;

a housing means for enclosing the battery means, the magnetic sensing means, tank module microcontroller means, and radio transmitting means;

the tank module means being mounted to a gauge of a magnetic float gauge assembly;

the display module means comprising;

a radio receiving means for receiving the broadcast fluid level value from the radio transmitting means and transmitting the fluid level value;

a microcontroller means for receiving the fluid level value from the radio receiving means and transmitting the fluid level value to a display means which displays the fluid level value;

a battery means for powering the radio receiving means, the display module microcontroller means, and the display means;

a housing means for enclosing the display module battery means, the radio receiving means, the display module microcontroller means, and the display means.

7. The remote fluid level detection system of claim 6, wherein the tank module means further comprises an attachment means for attaching the tank module means to the gauge without physically modifying the gauge.

8. The remote fluid level detection system of claim 7, wherein the attachment means is attached to the gauge without interfering with the operation of the gauge.

9. The remote fluid level detection system of claim 6, wherein the tank module means further comprises an electronic inclinometer means for determining the angular orientation of the tank, and transmitting the angular orientation to the tank module microcontroller means, wherein the tank module microcontroller means receives the angular orientation from the inclinometer means, and calculates the fluid level value to a corrected fluid level value.

10. The remote fluid level detection system of claim 6, wherein the tank module microcontroller calculates the fluid level value that corresponds to the percentage of fluid remaining in the tank, regardless of the orientation of the mounted tank module means with respect to the gauge.

11. The remote fluid level detection system of claim 6, wherein the tank module microcontroller further stores a number of calculated fluid level values.

12. The remote fluid level detection system of claim 11, wherein the tank module microcontroller means further calculates an average fluid level value from a predetermined number of stored fluid level values.

13. The remote fluid level detection system of claim 6, wherein the tank module means further comprises a timing means for communicating time information to the tank module microcontroller means.

14. The remote fluid level detection system of claim 6, wherein the tank module means continuously detects and transmits the fluid level to the display module means.

15. The remote fluid level detection system of claim 6, wherein the display module means displays the fluid level information continuously.

16. The remote fluid level detection system of claim 6, wherein the display module means further comprises an audio means for emitting an audible warning.

17. The remote fluid level detection system of claim 16, wherein the display module microcontroller further receives and stores a warning fluid level value such that if the display module microcontroller means calculates a fluid level value below the warning fluid level value, the display module microcontroller signals the audio means to emit an audible warning.

18. The remote fluid level detection system of claim 13, wherein the tank is towed behind a tractor.

19. The remote fluid level detection system of claim 18, wherein the display module further comprises a tractor ground speed connector means for connecting and receiving tractor ground speed information from a tractor ground speed indicator and transmitting the tractor ground speed information to the display module microcontroller means.

20. The remote fluid level detection system of claim 18 wherein the display module microcontroller means further calculates an average application rate of the fluid from the tank.

21. The remote fluid level detection system of claim 18, wherein the display module microcontroller further signals the audio means to emit an audible warning when the rate of application is over a certain limit.

22. The remote fluid level detection system of claim 18, wherein the display module microcontroller further calculates a total acreage coverage of liquid dispensed from the tank.

23. The remote fluid level detection system of claim 18, wherein the fluid is anhydrous ammonia.

24. A remote fluid level detection system for use with a pressurized towed tank comprising;

a tank module comprising a housing, a magnetic sensor, a microcontroller, a battery, an attachment band, and an RF transmitter;

a display module comprising a housing, a microcontroller, a display, and an RF receiver;

wherein the tank module housing encloses the tank module microcontroller, magnetic sensor, tank module battery, and RF transmitter; and is attached to the attachment band;

wherein the magnetic sensor, tank module battery, and RF transmitter are each connected to the tank module microcontroller;

wherein the display module housing encloses the display module microcontroller, display module display, and the RF receiver; and

wherein the display module display and the RF receiver are each connected to the display module microcontroller.

25. The remote fluid level detection system of claim 24 wherein the tank module housing is mounted by the attachment band over a gauge of a magnetic float gauge assembly.

26. The remote fluid level detection system of claim 25 wherein the tank module is mounted to the gauge without interfering with the operation of the gauge.

27. The remote fluid level detection system of claim 24 wherein the tank module further comprises a momentary switch which protrudes through an aperture in the tank module housing and is connected to the tank module microcontroller.

28. The remote fluid level detection system of claim 24 wherein the tank module further comprises a display which is connected to the tank module microcontroller.

29. The remote fluid level detection system of claim 24, wherein the tank module further comprises an electronic inclinometer which is connected to the tank module microcontroller.

30. The remote fluid level detection system of claim 24, wherein the display module further comprises an input button which protrudes through a first aperture in the display module housing and is connected to the display module microcontroller.

31. The remote fluid level detection system of claim 24, wherein the display module further comprises an audio transducer which is connected to the display module microcontroller.

32. The remote fluid level detection system of claim 24, wherein the display module further comprises a battery unit, housed within the display module housing, and connected to the display module microcontroller.

33. The remote fluid level detection system of claim 24, wherein the display module further comprises a power supply input which protrudes through a third aperture in the display module housing and is connected to the display module microcontroller.

34. The remote fluid level detection system of claim 24, wherein the display module further comprises a tractor ground speed input which protrudes through a fourth aperture in the display module housing and is connected to the display module microcontroller.

35. A remote fluid level detection system for use with a pressurized towed tank comprising;

a tank module comprising a housing, a magnetic sensor, a microcontroller, a battery, an attachment band, an RF transmitter, an electronic inclinometer, and a display; and

a display module comprising a housing, a microcontroller, a display, an RF receiver, and an audio transducer;

wherein the tank module housing encloses the tank module microcontroller, magnetic sensor, tank module battery, RF transmitter; electronic inclinometer, and tank module display; and is connected to the attachment band;

wherein the magnetic sensor, tank module battery, RF transmitter, tank module display, and electronic inclinometer are each connected to the tank module microcontroller;

wherein the display module housing encloses the display module microcontroller, display module display, RF receiver, and audio transducer; and

wherein the display module display, RF receiver, and audio transducer are each connected to the display module microcontroller; and

wherein the tank module housing is mounted over a gauge of a magnetic float gauge assembly without interfering with the operation of the gauge.

36. The remote fluid level detection system of claim 35 wherein the tank module is mounted to the gauge without interfering with the operation of the gauge.

37. The remote fluid level detection system of claim 35, wherein the display module further comprises a tractor ground speed input which protrudes through an aperture in the display module housing and is connected to the display module microcontroller.

38. A method of detecting and displaying the level of anhydrous ammonia remaining in a pressurized tank using the remote fluid level detection system of claim 35, comprising;

detecting, by the use of the magnetic sensor, the angular position of a magnetic field of a magnet from the magnetic float gauge assembly connected to the tank; and

transmitting the angular position of the magnetic field detected by the magnetic sensor to the tank module microcontroller;

determining the anhydrous ammonia level remaining in the tank by the use of the tank module microcontroller, based on the angular position of the magnetic field detected; and

displaying the anhydrous ammonia level remaining in the tank on the tank module display connected to the microcontroller.

39. A method of remote detection and display of anhydrous ammonia remaining in a pressurized tank using the remote fluid level detection system of claim 35, comprising;

detecting, by the use of the magnetic sensor, the angular position of a magnetic field of a magnet from the magnetic float gauge assembly connected to the tank; and

transmitting the angular position of the magnetic field detected by the magnetic sensor to the tank module microcontroller;

determining the anhydrous ammonia level remaining in the tank by the use of the tank module microcontroller, based on the angular position of the magnetic field detected;

transmitting the anhydrous ammonia level determined by the tank module microcontroller to the display module microcontroller by the use of a radio frequency transmission; and

displaying the anhydrous ammonia level remaining in the tank on the display module display connected to the display module microcontroller.

40. A method of determining the application rate of anhydrous ammonia from a pressurized tank using the remote fluid level detection system of claim 35, comprising;

detecting, by the use of the magnetic sensor, a first angular position of a magnetic field of a magnet from the magnetic float gauge assembly connected to the tank;

transmitting the first angular position of the magnetic field detected by the magnetic sensor to the tank module microcontroller;

determining a first anhydrous ammonia level remaining in the tank by the use of the tank module microcontroller, based on the first angular position of the magnetic field detected;

transmitting the first anhydrous ammonia level determined by the tank module microcontroller to the display module microcontroller by the use of a radio frequency transmission;

storing the first anhydrous ammonia level in the display module microcontroller;

waiting a predetermined period of time before a second angular position of the magnetic field is detected by the magnetic sensor;

detecting, by the use of an electronic magnetic sensor, a second angular position of a magnetic field of a magnet from a magnetic float gauge assembly connected to the tank;

transmitting the second angular position of the magnetic field detected by the magnetic sensor to the tank module microcontroller;

determining a second anhydrous ammonia level remaining in the tank by the use of the tank module microcontroller, based on the second angular position of the magnetic field detected;

transmitting the second anhydrous ammonia level determined by the tank module microcontroller to the display module microcontroller by the use of a radio frequency transmission;

storing the second anhydrous ammonia level in the display module microcontroller;

determining the period of time between the obtained of first anhydrous ammonia level and the second anhydrous ammonia level by the use of the microcontroller; and

determining the application rate of anhydrous ammonia by the use of the microcontroller.

41. The method of claim 40, wherein a warning application rate is set in the display module microcontroller, wherein the microcontroller signals an audio transducer to emit an audible signal if the application rate of anhydrous ammonia goes above the warning application rate.

42. The method of claim 40, wherein the display module microcontroller further calculates an estimated time at which the anhydrous ammonia level will reach zero.